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ABSTRACT

Hofstra University began a university-wide initiative to enhance classroom instruction with multimedia technology and foster collaborative approaches to learning. The Multimedia Instruction Initiative emphasized teamwork among faculty, students, and computer center support staff to develop a technology-enriched learning environment supported by multimedia-based instructional tools. Course objectives were realized within technology-based learning activities created by faculty members. Students were actively engaged in learning processes as they collaborated on the activities. The university provided resources and support for faculty members to explore and incorporate various multimedia technologies into classroom instruction. The initiative included traditional multimedia hardware/software (full motion video, sound, graphics, and CD-ROM based instructional tools) plus application of the World Wide Web. During 1997 and 1998, 12 faculty members submitted proposals outlining how their classes would use multimedia and how the new equipment and resources would help structure new learning environments. All five faculty members of the School of Education proposed to restructure their initial teacher education courses. Each faculty member was assigned a student assistant with multimedia expertise. Participants received laptop computers, software, and extensive training. They agreed to use the resources for teaching at least one credit-bearing course and to serve as resources for their respective schools and coaches to other faculty. Evaluation found that the courses increased collaboration, enhanced student motivation and participation, and taught concepts more easily. Faculty changed their teaching styles to focus on guiding and facilitating rather than imparting knowledge. Information on the initiative is appended including a Powerpoint presentation. (SM)

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MULTIMEDIA INSTRUCTION INITIATIVE: BUILDING FACULTY COMPETENCE

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MULTIMEDIA INSTRUCTION INITIATIVE: BUILDING FACULTY COMPETENCE

Penelope J. Haile, Ph.D.
Hofstra University
February 26, 1998

INTRODUCTION

This paper will describe a university-wide initiative to enhance classroom instruction with multimedia technology and foster a collaborative approach to the learning process. The project focused on team work between faculty, students and Computer Center support staff to develop a technology-enriched learning environment supported by multimedia-based instructional tools. In this model, the faculty serve as facilitators of the learning process. Some of the course objectives are realized within the technology-based learning activities created by the faculty member. Students are actively engaged in the learning process as they work through the activities in collaborative groups.

The university provided resources and support for faculty members to explore and incorporate a wide range of multimedia technologies into their classroom instruction. This initiative included traditional multimedia hardware/software including full motion video, sound, graphics and CD-ROM based instructional tools. Also included was the application of the World Wide Web for instruction, simulations, instructional datasets, and software that encourage a collaborative and explorative approach to learning.

This Multimedia Instruction Initiative is described and 5 examples of its impact on initial teacher preparation courses within the School of Education are given. Evaluation results are presented and discussed.

THE MULTIMEDIA INSTRUCTION INITIATIVE

Project Design

A university-wide Multimedia Application Lab and Development Lab Advisory Committee (a.k.a., the Multimedia Committee) was established in the spring of 1996 as an ad hoc committee to advise the Associate Provost for Information Systems regarding the construction of 2 new facilities: a multimedia application/teaching lab and a multimedia development lab. This exciting opportunity to construct 2 state-of-the-art multimedia facilities was made possible by the donation

to Hofstra of a significant contribution for the specific purpose of enhancing Hofstra's instructional technology resources.

The Multimedia Committee, comprised of faculty and some administrators, met during the spring, summer, and fall of 1996. Following extensive discussion, tours of other facilities, conference attendance, and reading, the committee made its final recommendations to the Associate Provost in November of 1996. The committee recommended establishing a classroom of 23 PC's arranged in "pods" or workgroups of 4 computers each and an instructor workstation equipped with laser printers and scanners. The recommendation for the development lab was to support both PC and Mac development with appropriate computers, scanners, laser printers (some color), a video camera, and equipment to make CD-ROM. In addition, the committee recommended that selected faculty, or "multimedia pioneers," receive support to enhance their courses with multimedia instructional tools. The recommendations were approved and the "Multimedia Instruction Initiative" was launched with the knowledge and backing of the faculty, the administration, the Board of Trustees, and the donor.

The Multimedia Instruction Initiative was designed to recruit and support faculty members from various schools and departments within the university to, over the course of a semester, revise their courses to take advantage of these new facilities and the underlying constructivist pedagogies they can support. Faculty volunteers were recruited from each of the University's schools except the Law School. The first cadre of faculty volunteers included 5 faculty from the School of Education, all of whom were involved in teacher preparation programs.

At the conclusion of the pilot semester of the project (Spring 1997), each School of Education "multimedia pioneer" presented his/her project to the school's faculty and administrators during a School of Education retreat. The project was formally evaluated by a psychometrician within the university, Dr. Liora Schmelkin, who is the Chairperson of Hofstra's Center for Teaching Excellence.

Participants

Faculty members assigned to classroom teaching responsibilities during the Fall 1997and Spring 1998 semesters were invited to submit a proposal (see Appendix A) outlining how their classes would be conducted using multimedia and how the new equipment and resources would be used to structure new learning environments for their students. The proposals were submitted to the appropriate academic dean for approval. All 12 applicants were accommodated for the initial semester of the project, including five from the School of Education.

All five School of Education faculty proposed to restructure and redesign their courses for initial teacher preparation, some at the undergraduate level and some at the graduate level. These courses were in the areas of elementary education math methods and science methods, secondary social studies methods, and analysis of movement in physical education.

The courses scheduled for revision and technology enhancement for the Spring 1997 semester were:

School of Education

ELED 227: Elementary School Curriculum
ELED 129: Integrated Teaching of Science
ELED 209: Mathematics in the Curriculum
ELED 126: Interdisciplinary Perspectives on Teaching Social Studies
SED 294: Instructional Patterns for Social Studies
SED 151: The Secondary School Teacher
HPER 106 Kinesiology

Hofstra College of Liberal Arts and Sciences

SOC 143: Research Methods in Sociology
PHI 165: Introduction to Symbolic Logic
FREN 113: French Civilization
ENGL 002: English Composition
ENGL182L:Readings in Literature/Literary Analysis
FA 102A: Multimedia Workshop
MATH 08: Elementary Math Statistics

Zarb School of Business

BCIS 30: Power Tools for End-User Support

The Resources and Support

Each faculty member was assigned a student assistant who had computer expertise in multimedia. The students were given the choice of either working for pay or treating the assistantship as an internship for undergraduate course credit. Most of the students were matriculated in the School of Business and had just completed a very successful course in multimedia software. The majority of the student assistants chose the internship which was supervised by the faculty member who had been the instructor for their initial multimedia software course.

The participants received a state-of-the-art laptop computer (either a Mac or a PC, depending upon the faculty member's preference) that they could continue to use as long as they taught courses utilizing computer-based multimedia. The laptops were used to facilitate the multimedia development and the software evaluation and selection processes. Some funds were made available to purchase either evaluation copies of software, several copies of selected software, or site licenses for chosen software. The faculty participants also received extensive training on the use of the hardware and various computer applications from the Academic Computer Center staff.

In turn, the participants agreed to use these resources in the teaching of at least 1 credit-bearing course during the Spring semester. The participants also agreed to serve as a resource for their respective schools and as coaches to other faculty interested in developing multimedia-based instructional tools for the classroom. And, finally, the participants agreed to share and

demonstrate their course development process/course modules in an annual Faculty Multimedia Program.

The Courses

Dr. Janice Koch used the Multimedia Instruction Initiative to integrate several technology applications into an existing science methods course for elementary pre-service teachers "in a way that facilitated the highly personal, self-directed, constructivist learning environment that was requisite in order for the course to achieve its stated goals....It was the goal of this initiative to create a learning community in which the use and applications of various technologies were taken for granted, and natural (Koch, 1998, p. 3)." Dr. Koch surveyed her class of 22 female undergraduates before the course began and discovered that 68% of the students had no e-mail experience, 90% had never explored the World Wide Web, 77% had no access to the university network (although network access is provided to each registered student at the university), and 94% never used an interactive multimedia device (such as a CD-ROM). Dr. Koch's class designed and implemented a web page with the help of the student assistant who attended most of the class meetings. E-mail was an important component of the class, since the students were able to communicate with "key pals" in Australia who were also pre-service teachers. The class also developed a rubrics for evaluating existing science education software and learned to make PowerPoint presentations.

Dr. Sharon Whitton integrated technology into courses she teaches both in the Department of Mathematics (in Hofstra College of Liberal Arts and Sciences) and in the Department of Curriculum and Teaching (School of Education). She employed several software applications, including Microworlds, Geometry Sketchpad, and Excel, to engage her students in interactive, constructing projects that required students to solve problems, analyze data, and construct models. In addition, the students communicated with each other and with Dr. Whitton via e-mail.

Dr. Alan Singer employed several multimedia technologies to introduce his students to hands-on methods of teaching social studies in the secondary schools. His students developed curricula for a web page in collaboration with graduates of Hofstra's secondary education program who are currently in-service teachers. E-mail served as a link between the graduates and the current students and, with the web page, served as a vehicle for a fledgling "Social Studies Support Network." Search engines were explored to research appropriate, relevant, and interesting sites for various curriculum areas. On-line ERIC searches were reviewed and practiced. Software packages currently used in the secondary schools were also reviewed and evaluated using criteria that the class collaboratively developed.

Dr. Nathalie Smith teaches a course in kinesiology for students in athletic training, exercise specialist, and teachers of physical education. The course has been using extremely crude and laborious methods for analyzing movement and the physiology of movement. Students were conducting studies using tracing paper, outmoded video cameras, and stick-figure drawings. With the introduction of state-of-the-art multimedia software, the students were able to conduct analyses that were much more reflective of the caliber used in the professions. The NEAT (Never Ending Athletic Training) System and various anatomical software (A.D.A.M. Comprehensive,

Interactive Physiology, etc.) were used extensively. These software packages and the hardware (computers, video cameras, links, etc.) to support them were all purchased through the Multimedia Instruction Initiative.

Dr. Susan Semel taught two initial teacher preparation courses, one at the undergraduate level and one at the graduate level. She incorporated some multimedia technology into both courses, particularly the Internet. Dr. Semel was especially interested providing a learning environment in which her students would be able to develop a keen sense of the politics of social studies curriculum as it is delivered on the Internet. To this end, the classes used various search engines to ferret out interesting web sites, critically examined these sites, and developed a critical perspective through reflection and discussion. These skills were similarly applied to the analysis of existing social studies software currently used in K-6 classrooms.

The faculties use of various technologies is summarized in Table 1.

TABLE 1: Examples of Technological Enhancements Used by the School of Education Pioneers

Technology	Science Methods	Mathematics Methods	Elem. Social Studies	Sec. Social Studies	Kines-iology
search Internet	X	X	X	X	X
construct web page	X			X	
e-mail (class)	X	X		X	X
e-mail graduates (in-service)				X	
e-mail (international)	X				
evaluate WWW sources			X		
evaluate software packages	X		X		
use specific software packages	X	X	X		X
PowerPoint	X				X
download pictures from the net					X
program multimedia software		X			

Evaluation of Project

Dr. Liora Schmelkin, Department of Psychology, is an Educational Psychologist and psychometrician who serves as the Chairperson for Hofstra's Center for Teaching Excellence. Dr. Schmelkin, at the request of the Multimedia Committee, conducted a formal evaluation of the first year of the Multimedia Instruction Initiative. Her conclusions (Schmelkin, 1997) focused on

three aspects of the project: the impact on students, the impact on the faculty members, and the impact on the student assistants who were assigned to the faculty. Dr. Schmelkin found that the students in the enhanced courses worked more collaboratively with their colleagues, were focused on their own writing and analysis skills, learned certain concepts through technology that were difficult to learn without the technology, were motivated and enthused about their course technology-based activities, and demonstrated increased class cohesion and participation.

Dr. Schmelkin's research found that the faculty had changed their teaching style to focus more on guiding and facilitating learning rather than on imparting knowledge. The technology-rich curriculum enabled them to address concepts they could not have as successfully addressed using other techniques. An additional product of the initiative was that the faculty learned more about the use of computers in their own disciplines.

As for the student assistants, Dr. Schmelkin found that the experiences they had with the faculty and classes to which they were assigned helped them to work better with a variety of people. They learned to be better presenters and facilitators of learning for their peers as well as for those whom they had previously perceived as the sages. They learned how to work around problems they experienced both in the computer laboratories and in the classrooms and they learned to develop creative solutions when thorny problems presented themselves.

Problems

No experiment with state-of-the-art technology is without problems, heartache, and hard-won knowledge. This project was no different. The problems are easy to understand, even predictable, but hard to solve. They include hardware breakdowns, delayed deliveries of equipment and software, incompatibility of systems and software, a shortage of trained support personnel, a shortage of equipment, and an arrray of "random" glitches. Everyone agrees, however, that more computers need to be available to both students and faculty and that more courses should be incorporating the exciting new multimedia. The inevitable problems can become bearable with administrative support and encouragement. However, providing "pioneering" faculty with rewards (computers, recognition, credit toward tenure/promotion, etc.) is necessary. As Russell Agne states during an interview for *AACTE Briefs* (May 12, 1997), "[w]e need to reward faculty to risk teaching creatively with technology when their chances for failure are very high and their incentives low (p.7)."

References

Koch, J. (1998). Technology and the Elementary Science Methods Course: Re-thinking Science and Technology and Ourselves as Science Learners. Paper presented at the Annual Meeting of the Association for the Education of Teachers in Science. Minneapolis, MN, January 8-11, 1998.

McNergney, R.F. (1997). Baffled by Technology? Take a Sabbatical. *AACTE Briefs*, May 12, 6-7.

Schmelkin, L. P. (1997). Evaluation of Instructional Technology Initiative, Spring 1997. *Center for Teaching Excellence Monograph Series, Report No. 2*, November.

APPENDIX A

HOFSTRA UNIVERSITY MULTIMEDIA INSTRUCTION INITIATIVE

TECHNOLOGY ENRICHED CLASSROOMS

The Joan and Joseph L. Dionne Teaching and Learning Center is a new resource for faculty and students. This classroom has 23 PC computers. The Computer Center, working with the Multimedia Committee, designed this facility to support this initiative.

The School Of Education Technology Enriched Classroom located in 240 Gallon Wing is a classroom for those faculty members whose preferred platform is Macintosh.

The focus of this initiative is to enhance classroom based instruction and foster a collaborative approach to the learning process. This project focuses on team work between the faculty, students and Computer Center support staff to deliver a new paradigm of learning supported by multimedia-based instructional tools.

The faculty serves the students as a facilitator of the learning process. The course objectives are delivered within the technology-based learning activities created by the faculty member. Students are actively engaged in their learning process as they work through these activities in collaborative groups.

Hofstra University will provide resources and support for faculty members to explore and incorporate a wide range of multimedia technologies into classroom instruction. This initiative includes traditional multimedia hardware/software including full motion video, sound, graphics and CD-ROM based instructional tools. Also included in is the application of the World Wide Web for instruction, simulations, instructional datasets, and software that encourages a collaborative and explorative approach to learning.

REQUIREMENTS FOR PARTICIPATION:

1) The faculty members must be assigned to classroom teaching responsibilities during the Fall and Spring semesters
2) A proposal must be submitted outlining how the class is to be conducted and how the equipment will be used to deliver instruction
3) The hardware configurations include a multimedia capable laptop in PC or Macintosh platform with software and operating systems that are supported by the Computer Center
4) Proposal's must be submitted, approved and supervised by the Dean's office
5) The participants must agree to utilize the resources in the teaching of a credit bearing course
6) The participants must agree to serve as a resource for their respective Schools and volunteer to serve as coach to other faculty interested in developing multimedia-based instructional tools for the classroom
7) Participants agree to share and demonstrate their course development process/course modules in an annual Faculty Awareness Program scheduled by the Computer Center

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EQUIPMENT OWNERSHIP AND PARTICIPANT RESPONSIBILITIES

Equipment and Student Assistant services awarded through this program are intended for the use of faculty members designated as "pioneers" in the Teaching and Learning Center Project. Ownership of the equipment will remain with the Computer Center. Upon satisfactory completion of Items 5-7 within each semester, the resources will be

reassigned to the faculty. If these items are not completed, the resources may be reclaimed for distribution to future applicants. Satisfactory completion will be determined at the end of each semester by the academic dean and the Director of Academic Computing working collaboratively.

It is the intent of this program to encourage faculty to continue to develop course modules and integrate instructional computing into the curriculum. The dean of the college or school will be responsible for determining that the spirit of this initiative is continuous.

PROPOSAL GUIDELINES

1) Indicate how multimedia -based hardware or software will be used specifically to enhance and supplement instruction in the classroom to achieve instructional objectives
2) Demonstrate how these computing resources will foster a collaborative approach to teaching and learning
3) Document that the faculty members do not already have sufficient access to multimedia equipment adequate for the specified uses and that the requested equipment is appropriate for such use.
4) Include a support statement from the Dean's office indicating that resources required by the faculty member to achieve this intent of this project will be provided. This support may include the purchase of discipline specific software applications, the provision of faculty release time, or provide other supplemental resources necessary to integrate fully this computing technology into the classroom environment.

For this initial phase, proposals will be submitted to the Director of Academic Computing. Future proposals for the Spring 1998 semester, will be directed to the Center for Teaching Excellence for review.

PROPOSAL FOR THE MULTIMEDIA INITIATIVE

Faculty Name: _____ _____

Phone: _____ E-Mail: _____

Preferred location:

_____TLC Classroom (PC Computers) 216 McEwen Hall

_____ SOE TLC (Macintosh) 240 Gallon Wing

Course Title and Number: _____ _____

Instructional Objectives:

Vision statement about the course

Information Technologies Used in this course and how they will be used

Hardware and software needed by the course participants

Text for the course

A letter of support from your Dean must accompany this proposal. This letter must include funding and budget numbers for academic specific software and hardware required for your proposal.

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POWERPOINT PRESENTATION

PENELOPE J. HAILE, PH.D.
HOFSTRA UNIVERSITY

MULTIMEDIA INSTRUCTION INITIATIVE: BUILDING FACULTY COMPETENCE

A university-wide initiative to recruit and support faculty members to revise their courses to take advantage of new multimedia facilities and the underlying constructivist pedagogies they can support.

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PEDAGOGICAL GOALS

- reduce the emphasis on the lecture,
- improve the relationship between the course and real-world applications,
- scale up the amount of doing while scaling back the watching,
- include team and cooperative learning experiences, and
- integrate rather than overlay technology into the courses.

Dara Pace, Intern

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INTERESTED COMMUNITIES

- Donor
- Board of Trustees
- University Administration
- Faculty
- Students
- Accrediting Agencies (Middle States, NCATE, AACSB, ABET, etc.)

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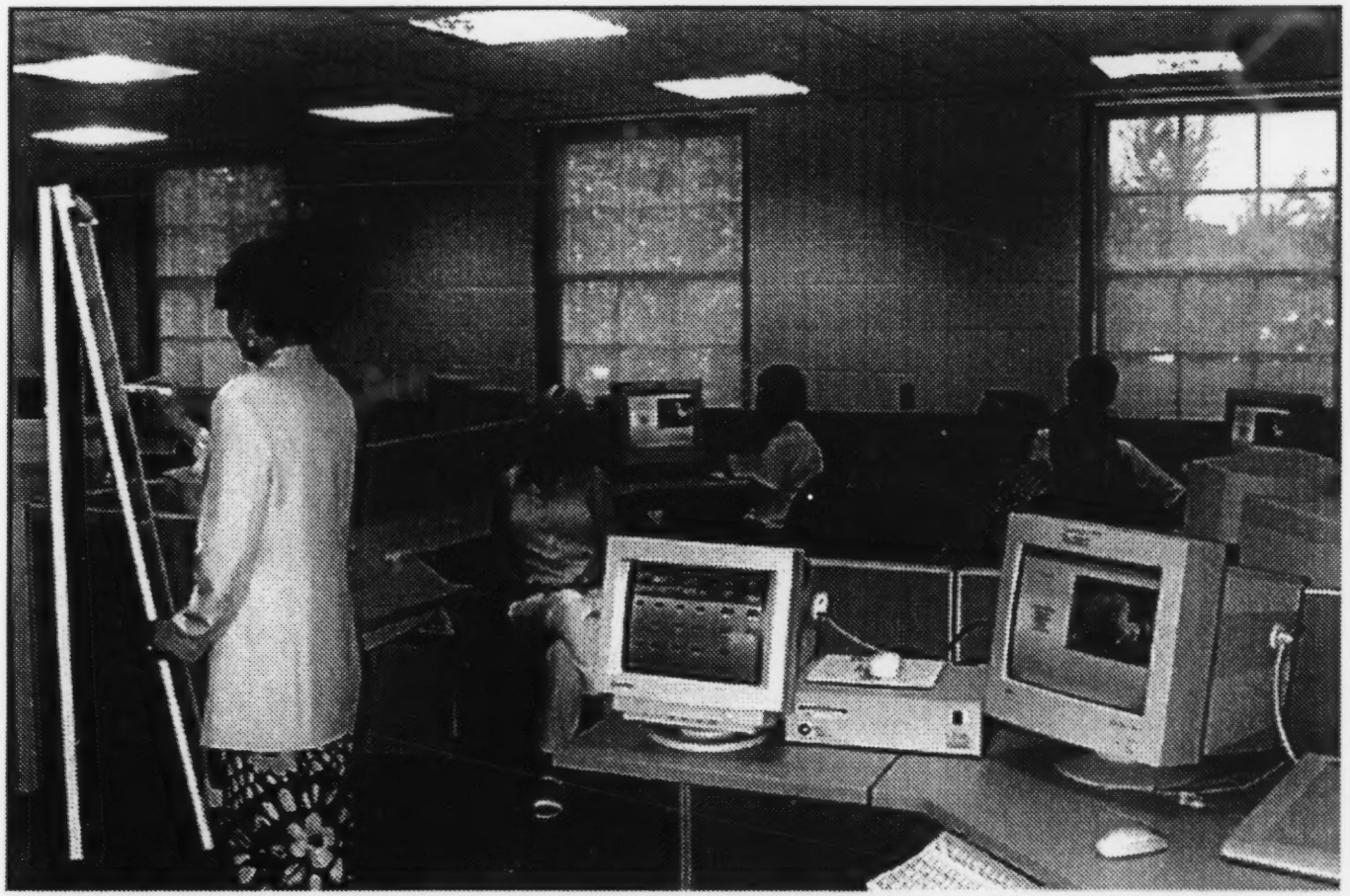
Technology-Enhanced Classroom



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The selection criteria were:

- Teaching one or more courses in the Spring 1997 semester,
- Willing to revise one or more courses to incorporate multimedia instructional activities,
- Willing to mentor other faculty to learn new technologies and the constructivist pedagogies they support, and
- Agree to present their experiences at the full faculty workshop at the end of the semester.

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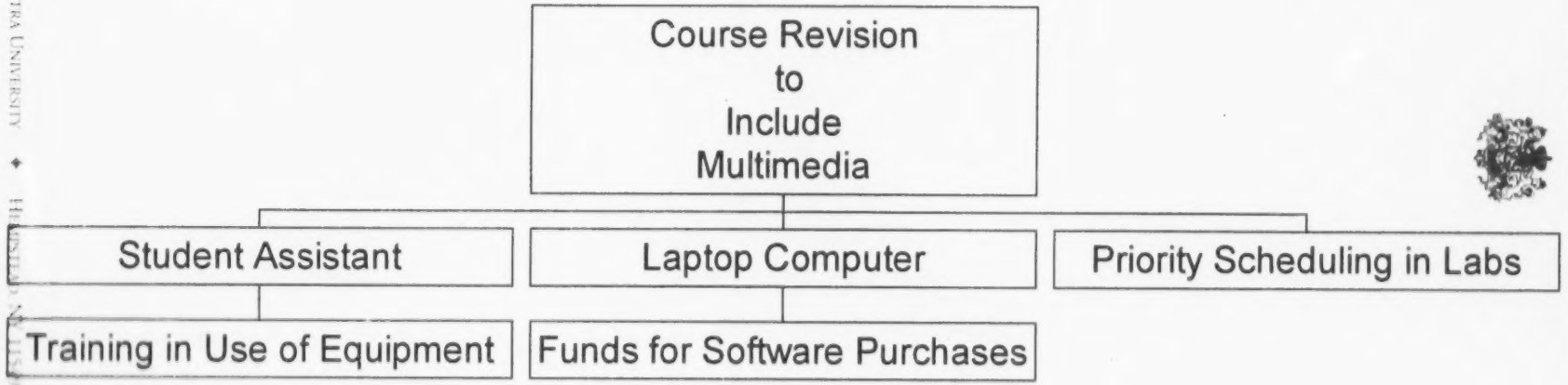
SUPPORT FOR FACULTY



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REVISED EDUCATION COURSES

- Elementary School Curriculum
- Integrated Teaching of Science
- Mathematics in the Curriculum
- Interdisciplinary Perspectives on Teaching Social Studies
- Instructional Patterns for Social Studies
- The Secondary School Teacher
- Kinesiology

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INSTRUCTIONAL GOAL

To integrate multimedia technologies into courses "in a way that facilitated the highly personal, self-directed, constructivist learning environment ….It was the goal of this initiative to create a learning community in which the use and applications of various technologies were taken for granted, and natural."

J. Koch, 1998

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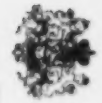

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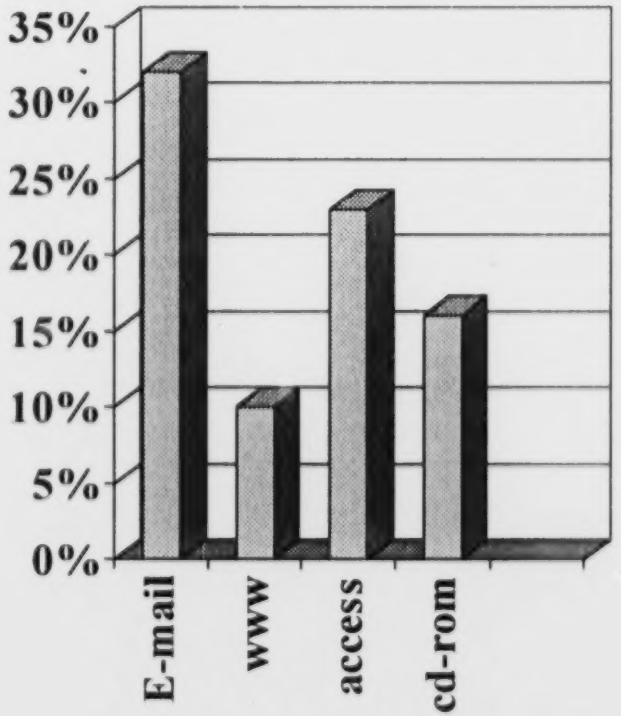
Pre-Test of Science Methods Students Computer Literacy

- The 22 students were all female undergraduates ranging in age from 20 to 38.



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Technology in Science Methods Course

- searches on the Internet for science and science education sites
- constructed a class web page
- e-mail among the students, the instructor, and the student assistant
- e-mail buddies in Australia who were also engaged in an elementary science methods course
- developed evaluation rubric for elementary science software
- worked interactively with a Hyperstudio presentation of Gender Equity in Science
- enhancement of elementary science presentations with use of PowerPoint

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TEACHING SOCIAL STUDIES TECHNOLOGY ENHANCEMENT

- use of various search engines
- development of a critical perspective
- awareness of politics of social studies curriculum as delivered on the Internet
- critically examine and reflect on Internet sites and existing social studies software currently used in K-6 classrooms

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SECONDARY SOCIAL STUDIES METHODS

- e-mail among current students, instructor, student assistant and former students,
- web searches, including ERIC searches
- review of current CD-ROM software
- provide a peer support network for recent graduates who are teaching in urban schools.
- create a web page to disseminate social studies curricula

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KINESIOLOGY FOR TEACHERS OF PHYSICAL EDUCATION

- use e-mail for communication
- search the Internet for resource sites in biomechanics and human movement
- download pictures, text, and video from the net and insert pictures, text, and video into various word processing, presentation, and paint programs
- use the NEAT (Never Ending Athletic Training) System to analyze human movement
- use various anatomical software (A.D.A.M. Comprehensive, Interactive Physiology)

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ELEMENTARY MATHEMATICS METHODS

- explore dynamic, interactive construction software, such as Geometry Sketchpad
- use multimedia programming, such as Microworlds
- research projects using the Internet
- e-mail among class members and instructor

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EVALUATION OF INITIATIVE: STUDENTS

- enabled students to work more collaboratively
- focused students on their writing and analysis skills
- enabled students to learn certain concepts
- motivated students
- increased class cohesion and participation

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IMPACT ON FACULTY

- changed their teaching style to focus more on guiding and facilitating learning rather than on imparting knowledge
- enabled them to address concepts they could not have as successfully addressed using other techniques
- learned more about the use of computers in their disciplines

IMPACT ON STUDENT ASSISTANTS

- helped them to work better with a variety of people
- taught them to be better presenters and facilitators of learning
- they learned how to work around problems and to develop creative solutions

ROOM FOR IMPROVEMENT

- address the problems of hardware breakdowns
- make contingency arrangements (e.g., loaner laptops)
- train lab proctors to deal with emergencies
- provide more computers in more courses
- limit access to lab while classes are in session

WEB SITES YOU MIGHT WANT TO SEE

- WWW.hofstra.edu/
- WWW.li.net/~sthakker/eled/
- WWW.erols.com/luskoff/alan/table.html

THANK YOU !

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